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## METHYL BROMIDE FUMIGATION

- For purpose of these regulations, field soil fumigation does not apply to:
  - Golf courses
  - Tree holes
  - Potting soil
  - Raised tarp fumigation and nursery fumigation < 1 ac.
  - Greenhouses & other similar structures



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## METHYL BROMIDE FUMIGATION OVERVIEW


- Worksite plan
- Notification requirements
- Buffer zones
- Fumigation methods
- Worker safety
- CEQA

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## WORKSITE PLAN

- Operator of property shall submit a worksite plan
- To the Commissioner (CAC)
- 7 days prior to submitting notice of intent (NOI)
- CAC shall retain the worksite plan for 1 year after expiration of permit



3CCR 6450

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## WORKSITE PLAN

- Worksite Plan will include
  - Method of fumigation
  - Acreage (not to exceed 40 acres) and identification of each application block
  - Application rate
  - Notification procedures
  - Tarp repair response and removal plan
  - Description of any activities within buffer zones

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## PERMIT CONDITIONS

CAC shall include the following:

- Evaluation of local conditions and proposed worksite plan
- Size and duration of buffer zone
- Work hour restrictions
- Specific notification procedure
- Restrictions to address local conditions
- Tarp repair response and removal plan



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## NOTIFICATION REQUIREMENTS

- NOI to CAC 48 hours prior to application
- Notification of Property Operators within 300 feet from perimeter of Outer Buffer Zone that a permit to use MeBr near their property has been issued
- Notification to employees when buffer zones extend into other properties

3CCR 6450.1

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## INITIAL NOTIFICATION

- After approval of worksite plan and at least 7 days prior to submitting NOI
- Include :
  - Chemical name
  - Name, address, and telephone number of operator of property and CAC
  - Earliest and latest dates the fumigation will start
  - How to request subsequent notification

3CCR 6450.1(b)

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## SPECIFIC NOTIFICATION

48 hours prior to fumigation (time specific):

- Provide to all requesting persons within 300 feet of outer buffer zone:
  - Date(s) and time(s) of fumigation
  - Buffer zone expiration

3CCR 6450.1(b)(2)

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## EXERCISES

### WORKSITE PLAN



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## BUFFER ZONE DEFINITION

The area that surrounds a pesticide application block in which certain activities are restricted for a specified period of time to protect human health and safety from existing or potential adverse effects associated with a pesticide application

3CCR 6000

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## BUFFER ZONES

### GENERAL RULES

- Measured from edge of application block
- Restrictions begin at start of injection
- In effect at least 36 hours after completion of injection
- If school is within 300 ft of the perimeter of the outer buffer zone, the injection shall be completed 36 hrs prior to the start of a school in session

3CCR 6450.2(i)

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## BUFFER ZONES TYPES

- Two types
  - **Inner**
    - Not less than 50 feet
    - Limited to transit and fumigation handling activities
  - **Outer**
    - Not less than 60 feet
    - Limited to transit, fumigation handling activities, and activities approved by CAC
    - Activity not to exceed 12 hours in 24 hours

3CCR 6450.2(d,e,f)

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## BUFFER ZONES

Inner buffer zone may extend into other property if:

- Agricultural property
- Written permission is received
- Buffer zone boundary is posted
- Workers notified

3CCR 6450.2(e)(3)

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## BUFFER ZONES

Outer buffer zone may extend into other property:

- With permission from other property operator
- No occupied housing within buffer zone
- No schools, convalescent hospitals or sensitive sites on property
- Workers notified

3CCR 6450.2(f)(3)

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## BUFFER ZONES

- Dependent on
  - Size of application block
  - Time & distance from nearby MeBr field fumigation
  - Application rate
  - Fumigation method
  - Emission ratio
  - Other factors

GUIDANCE MANUAL

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## BUFFER ZONE APPLICATION BLOCK

- Field or portion of field treated in a 24 hour period
- Typically identified by visible indicators, maps or other tangible means
- Shall not exceed 40 acres

3CCR 6450.2(g)

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## BUFFER ZONE APPLICATION BLOCK

- Time and Distance From Other Fumigation
  - Off-gassing from fields in close proximity combines to increase the concentration of MeBr in the air near both locations
  - Classify proposed application blocks
    - Isolated Blocks
    - Non-Isolated Blocks

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## BUFFER ZONE APPLICATION BLOCK

Isolated Blocks

- Separated by a minimum of 1,300 feet

or

- Separated by at least 36 hrs from end of injection to beginning of next fumigation

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## BUFFER ZONE APPLICATION BLOCK

Non-Isolated Blocks

- Closer than 1,300 feet away  
**and**
- Less than 36 hrs from the end of injection to beginning of next fumigation

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## BUFFER ZONE APPLICATION RATE

- Calculation
  - Pounds per acre of active ingredient in formulated product
- MeBr 57/43 at 360 # / acre
- Rate =  $360 \times 57\%$  or  $360 \times .57 = 205.2\# / \text{acre}$

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## BUFFER ZONE EMISSION RATIO/RATE

- **Emission ratio:** rate of MeBr volatilized based on fumigation method and it's found in the guidance manual
- **Emission rate:** emission ratio X application rate

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## BUFFER ZONE TABLES

- Tables 2 & 3: Outer buffer zone
- Table 4: Inner buffer zone
- Table 5: Buffer zone duration

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## FUMIGATION METHODS GENERAL REQUIREMENTS

- Requirements include:
  - Purging of lines
  - Air fan dilution
  - Chisel modifications
  - Approved tarp
  - Tarp permeability factor: 5-8
  - Injection depth
  - Bury ends 4 inches

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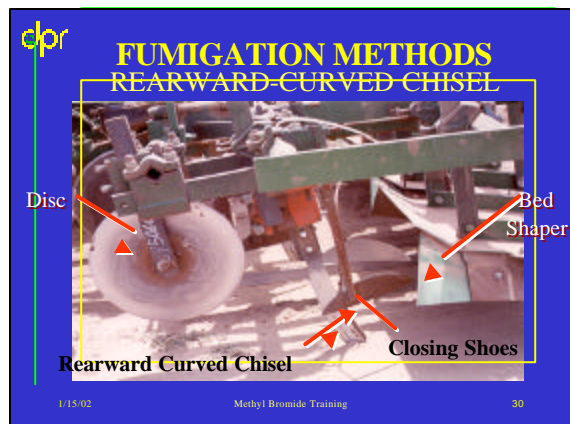
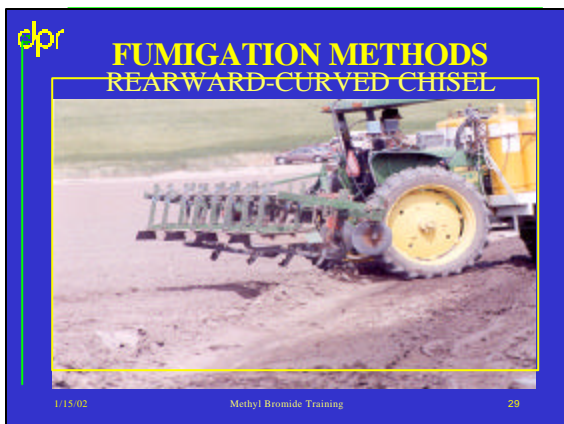
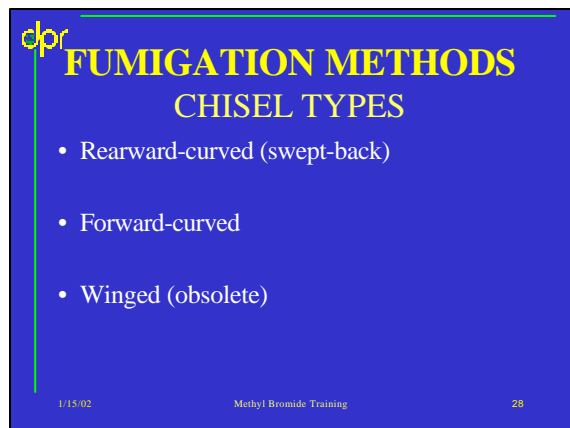
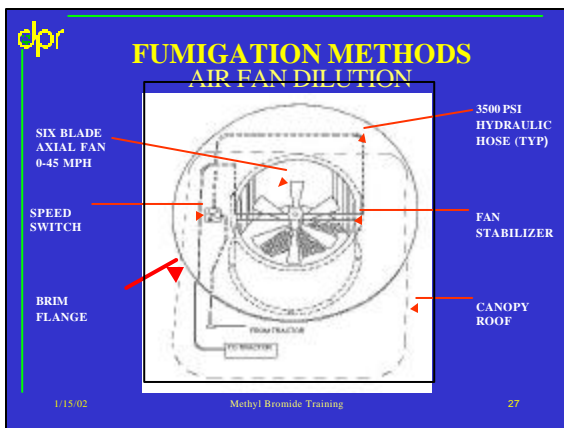
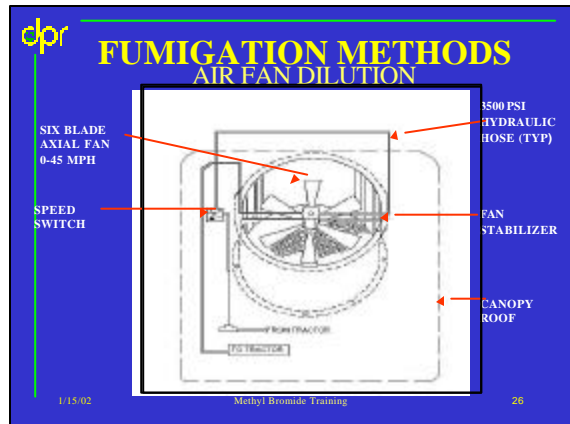
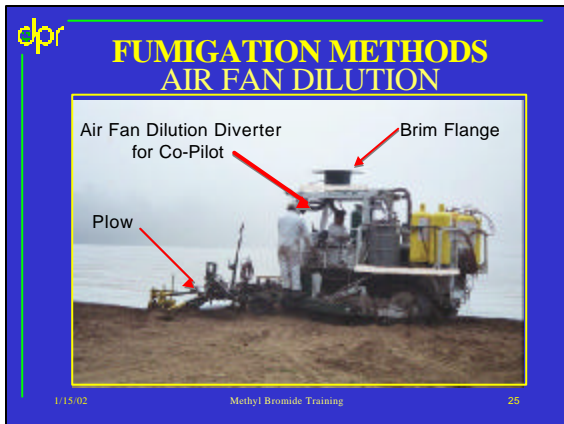
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## FUMIGATION METHODS

FUMIGATION LINE



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dpr **FUMIGATION METHODS**  
FORWARD-CURVED CHISEL



**Tire is Closing Shoe** **Chisel**

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dpr **FUMIGATION METHODS**  
WINGED CHISEL



**ABSOLUTELY NOT** **WINGED CHISEL**

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dpr **FUMIGATION METHODS**  
NON-TARP/SHALLOW/BED

- Maximum rate: 200 pounds/acre
- Air fan dilution system required on the application tractor
- Rearward-curved chisel used with:
  - Closing shoes and bed shaper, or closing shoes and compaction roller; and
  - Chisel injection points positioned beneath and ahead of the closing shoes

3CCR 6450.3(a)(1)

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dpr **FUMIGATION METHODS**  
NON-TARP/SHALLOW/BED

- Injection depth 10 to 15 inches
- Injection spacing 40 inches or less
- Do not disturb soil for 3 days (72 hours) following completion of the injection
- REI 3 days (72 hours)

3CCR 6450.3(a)(1)

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dpr **FUMIGATION METHODS**  
NON-TARP/DEEP/BROADCAST

- Maximum rate: 400 pounds/acre
- Forward-curved chisel
  - Air fan dilution system required on the application tractor and a minimum injection depth of 20 inches
- or
- Closing shoes and compaction roller and minimum injection depth of 24 inches
- Injection spacing 68 inches or less
- Do not disturb soil for 4 days (96 hours) following completion of the injection
- REI 4 days (96 hours)

3CCR 6450.3(a)(2)

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dpr **FUMIGATION METHODS**  
TARP/SHALLOW/BROADCAST

- Maximum rate: 400 pounds/acre
- Application shall be made using either:
  - Air fan dilution system on application tractor, and a plow consisting of horizontal v-shaped blades
- or
- Rearward-curved (swept-back) chisels, closing shoes, and compaction roller
- Injection depth shall be between 10 to 15 inches

3CCR 6450.3(a)(3)

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**FUMIGATION METHODS**  
**TARP/SHALLOW/BROADCAST**

- Injection spacing 12 inches or less
- Tarp laid simultaneously by application tractor
- Tarp cut after 5 days (120 hours)
- Remove tarp 24 hours after cut
- REI:
  - Starts at injection
  - Ends after tarp removal
  - Minimum of 6 days (144 hours)

3CCR 6450.3(a)(3)


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**FUMIGATION METHODS**  
**V-SHAPED BLADES**  
Example: modified Nobel PLOW



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**FUMIGATION METHODS**  
**MODIFIED NOBEL PLOW**



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**FUMIGATION METHODS**  
**TARP/SHALLOW/BED**

- Maximum rate: 250 pounds / acre
- Rearward-curved (swept-back) chisels shall be used with either:
  - Closing shoes and compaction roller or,
  - Bed shaper or,
  - Combination bed former and bed shaper
- Injection depth: 6 - 15 inches
- Injection spacing: 12 inches or less

3CCR 6450.3(a)(4)

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**FUMIGATION METHODS**  
**TARP/SHALLOW/BED**

- Tarp options:
  - **Cut and remove:** cut no sooner than 5 days (120 hrs), remove after 24 hrs, and REI expires after removal (6 days)
  - **Cut only:** cut no sooner than 5 days, REI expires 48 hrs after cutting ( 7 days)
  - **Tarp undisturbed:** REI is 14 days, and test less than 5 ppm

3CCR 6450.3(a)(4)

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**FUMIGATION METHODS**  
**TARP/SHALLOW/BED**  
**WHAT IS WRONG WITH THIS PICTURE ?**



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**dpr FUMIGATION METHODS**  
TARP/DEEP/BROADCAST

- Maximum rate: 400 pounds / acre
- Forward-curved chisels used with either:
  - Air fan dilution system on application tractor

**or**

- Closing shoes and compaction roller
- Injection depth: minimum of 20 inches

3CCR 6450.3(a)(5)

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**dpr FUMIGATION METHODS**  
TARP/DEEP/BROADCAST

- Injection spacing: 66 inches or less
- Tarp laid simultaneously by application tractor
- Tarp cut after 5 days (120 hours)
- Remove tarp 24 hours after cut
- REI:
  - Starts at injection.
  - Ends after tarp removal
  - Minimum of 6 days

3CCR 6450.3(a)(5)

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**dpr FUMIGATION METHODS**  
TARP/DEEP/BROADCAST



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**dpr FUMIGATION METHODS**  
DRIP SYSTEM-HOT GAS

- Maximum rate: 225 pounds / acre
- Injection depth: 1 inch
- Disconnect drip system from the water supply
- Bury all fittings and emitters 1 inch
- Check for blockage and leaks using air or water

3CCR 6450.3(a)(6)

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**dpr FUMIGATION METHODS**  
DRIP SYSTEM-HOT GAS

Prior to fumigation:

- Place and secure tarp
- Inspect tarp for tears, holes
- Pressure test above ground fittings - 50 psi
- Use compressed air, water or nitrogen gas
- If using air or nitrogen, use soap solution to check for leaks
- Purge system of water using pressurized gas

3CCR 6450.3(a)(6)

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**dpr FUMIGATION METHODS**  
DRIP SYSTEM-HOT GAS

Prior to disconnect:

- Purge MeBr from lines
- Pinch off drip line
- Disconnect tubing and secure
- Purge system of fumigant at end of day

3CCR 6450.3(a)(6)

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**FUMIGATION METHODS**  
**DRIP SYSTEM-HOT GAS**

- Use positive shut-off fittings for heat exchanger
- Handlers shall wear eye protection specified on the label when working with manifold or tubing containing fumigant under pressure
- REI: 3 options: cut and remove, cut only, or tarp undisturbed

3CCR 6450.3(a)(6)


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**FUMIGATION METHODS**  
**DRIP SYSTEM-HOT GAS**



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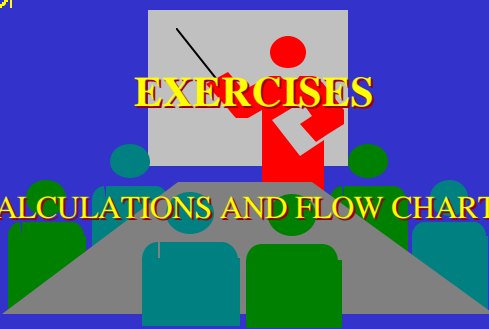
**FUMIGATION METHODS**  
**DRIP SYSTEM-HOT GAS**



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**EXERCISES**

**CALCULATIONS AND FLOW CHARTS**



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**WORKER SAFETY REQUIREMENTS**  
**EXPOSURE RECORDS**

- For all handlers: application, aeration, tarp repair and removal
- Include: handler's name, activity, date, duration, EPA registration number, brand name
- Maintain for two years at central location

3CCR 6784(b)(2)

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**WORKER SAFETY REQUIREMENTS**  
**NON-TARP/SHALLOW/ BED**

- **WORK HOURS:**
  - Driver: 4 hrs/24 hours

3CCR 6784

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## WORKER SAFETY REQUIREMENTS

### NON-TARP/DEEP/ BROADCAST

- WORK HOURS:
  - Driver: 4 hrs/24 hours

3CCR 6784

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## WORKER SAFETY REQUIREMENTS

### TARP/SHALLOW/BROADCAST

- WORK HOURS:
  - Driver: 4 hrs/24 hrs
  - Copilot, shoveler: 3 hrs/24 hrs
  - Cutter: 4 hrs/24 hrs
  - Remover: 7 hrs/24 hrs

3CCR 6784

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## WORKER SAFETY REQUIREMENTS

### TARP/SHALLOW/BED

- WORK HOURS:
  - Driver: 4 hrs/24 hrs
  - Copilot, shoveler: 4 hrs/24 hrs
  - Cutter: 4 hrs/24 hrs
  - Remover: 7 hrs/24 hrs

3CCR 6784

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## WORKER SAFETY REQUIREMENTS

### TARP/DEEP/BROADCAST

- WORK HOURS:
  - Driver: 4 hrs/24 hrs
  - Copilot, shoveler: 3 hrs/24 hrs
  - Cutter: 4 hrs/24 hrs
  - Remover: 7 hrs/24 hrs

3CCR 6784

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## WORKER SAFETY REQUIREMENTS

### HOT GAS APPLICATION

- WORK HOURS:
  - Applicator: 2 hrs/24 hrs
  - Cutter: 4 hrs/24 hrs
  - Remover: 7 hrs/24 hrs

3CCR 6784

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## WORKER SAFETY REQUIREMENTS

### WORK HOURS ADJUSTMENT

- Work hours may be increased if actual application rate is less than the method maximum rate

Adjusted work hours = (max rate) actual application rate) x max hrs per 24 hrs

3CCR 6784(b)(6)

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## TARP REPAIR REPAIR RESPONSE PLAN

- Include in worksite plan
- Identify parties responsible for detection and repair
- Decision to repair made by a certified applicator:
  - Permittee
  - Authorized representative
  - Pest control operator

3CCR 6784(b)(6)

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## TARP REPAIR REPAIR RESPONSE PLAN

Decision factors:

- Hazards to public, residents, or workers
- Proximity to occupied structures
- Timing of damage
- Size of damaged area and feasibility of repair
- Environmental factors (e.g. wind speed/direction)

3CCR 6784(b)(6)

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## TARP REPAIR REPAIR RESPONSE PLAN

Repair requirements :

- Testing must be done by certified applicator wearing SCBA
  - Less than 5 ppm, 1 hour without SCBA
  - 5 ppm or more, wear SCBA

3CCR 6784(b)(6)

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## FIELD POSTING

- Prior to fumigation
- Until the end of REI
- No fieldworker entry until REI elapsed and signs removed

3CCR 6776(d)

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ABSOLUTELY

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## CEQA/PERMITS

- Assembly Bill 3765: alternative to Environmental Impact Reports for application of Restricted Materials
- Justification of equivalency based on state pesticide regulatory program:
  - Registration
  - Licensing
  - Monitoring of pesticide health and environmental effects
  - Regulation of use through the permit system

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## CEQA/PERMITS

The permit process includes provisions for:

- Implementation of mitigation measures as required for health and environmental safety
- Consideration of alternative methods and materials
- Denial when hazards cannot be mitigated
- Due process = review and appeal

## CEQA / PERMITS PERMIT REVIEW

- “Any interested person may request the CAC to review his or her action in issuing, refusing, revoking, suspending or conditioning a permit to use or possess a restricted material” CFAC Section 14009 (a)
- ENF Letter 98-030
- DPR Executive Office Letter 97-5

## CEQA/PERMITS PERMIT REVIEW

A request for a restricted material review shall be submitted in writing to the CAC by any interested person and include:

- Location of property to be treated
- Location of persons and property affected
- Name of the restricted material
- Name and address of the operator of property to be treated
- other info deemed relevant by CAC or filer

## CEQA/PERMITS PERMIT REVIEW

CAC will review request and issue a decision within 10 days of receipt

- Undue hazard
  - Feasible alternatives
  - Mitigation measures
  - Local conditions
  - Likelihood that permit conditions will be violated
- Decisions may affirm, modify or cancel permit

## CEQA/PERMITS PERMIT APPEAL

- CAC Decision may be appealed by a directly affected person to the Director
- Director will act on appeal within 10 days of receipt
- Director may stay permit until appeal is complete
- Any interested person can request that the appeal hearing be held in a public place

## CEQA/PERMITS PERMIT APPEAL

Appeals limited to the following issues:

- Is proposed permit use consistent with label and regulations?
- Did CAC properly consider local conditions?
- Did CAC abuse his or her discretion?

